

CLAIMS

1. An as-manufactured multi-wall sack that comprises an inner pouch, typically made from a polymeric material, and an outer bag, typically made from a paper-based material, with the sack having a top end that (a) is open in the as-manufactured form of the sack so that the sack can be filled with product via the open end and (b) is formed so that it can be closed to form a top block end, and wherein, in the as-manufactured form of the sack, the sack comprises pressure adhesive that connects together the inner pouch and the outer bag at the open top end of the sack.
- 15 2. The sack defined in claim 1 wherein the amount and/or the type of adhesive is selected so that the adhesion of the inner pouch to the outer bag is greater on one of a front or a rear side of the sack than on the opposite side of the sack so that, as part of a sequence of steps to close the outer bag after a step of heat sealing the inner pouch closed, the front and rear sides of the outer bag can be folded outwardly with the sealed inner pouch being selectively detached from one of the sides of the outer bag and being retained by the other side.
- 30 3. The sack defined in claim 1 or claim 2 wherein, in the as-manufactured form of the sack, the sack comprises heat-activated adhesive on sections of the outer bag that adhere to other sections of the outer bag as part of the sequence of steps to close the outer bag.
- 35 4. The sack defined in claim 3, wherein, in the as-manufactured form of the sack, the positions of the sections of the outer bag that carry heat-activated adhesive are selected so that the sequence of steps to close the outer bag where possible positions the heat-

activated adhesive sections so that the sections do not overlie the inner pouch.

5. The sack defined in any one of the preceding claims comprises an "easy" open feature on the outer bag that facilitates opening the outer bag after it has been closed.

6. An as-manufactured multi-wall sack that comprises an inner pouch, typically made from a polymeric material, and an outer bag, typically made from a paper-based material, with the sack having a top end that (a) is open in the as-manufactured form of the sack so that the sack can be filled with product via the open end and (b) is formed so that it can be closed to form a top block end, and wherein, in the as-manufactured form of the sack, the sack comprises heat-activated adhesive on sections of the outer bag that adhere to other sections of the outer bag as part of the sequence of steps to close the outer bag.

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7. A filled and sealed bulk packaging sack formed by filling and closing the as-manufactured multi-wall sack defined in any one of claims 1 to 6.

25 8. The bulk packaging sack defined in claim 7 further comprises a vent seal to allow air to escape from the inner pouch after the inner pouch has been closed.

9. The bulk packaging sack defined in claim 7 or 30 claim 8 wherein the vent seal defines a tortuous flow path for air to escape from the closed inner pouch.

10. The bulk packaging sack defined in any one of claims 7 to 9 further comprises product identification 35 coding applied to the inner pouch after filling the as-manufactured multi-wall sack with product and prior to closing the outer bag.

11. The bulk packaging sack defined in any one of claims 7 to 10 further comprises product identification coding on the outer bag.
- 5 12. An apparatus for forming a top block end on the as-manufactured multi-wall sack defined in any one of claims 1 to 6 after the sack has been filled with product, which apparatus comprises:
- 10 (a) a means for supporting opposed front and rear sides of a filled sack having an open top end as the sack is moved between and operated on at the following stations (b) to (e);
- 15 (b) a first sealing station for bringing opposed sides of the open top end of the inner pouch into contact and heat sealing the opposed sides together and thereby closing the inner pouch;
- 20 (c) a first folding station for folding the opposed sides of the outer bag outwardly and forming out-turned sides and in-turned triangular wings, with the heat sealed inner pouch being retained by pressure adhesive to one side of the outer bag;
- 25 (d) a second sealing station for activating heat-activated adhesive along a section of an inner surface of one of the out-turned sides of the outer bag and thereafter folding the out-turned sides of the outer bag inwardly so that the adhesive-carrying inner side of the outer bag overlies and contacts an outer surface of the other side and the activated heat-sensitive adhesive adheres the folded sides together, with the inward folding of the out-turned sides causing sections of each in-turned wing to fold inwardly to overlie other sections of the wings; and
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- (e) a third sealing station for activating heat-sensitive adhesive along sections of surfaces of the in-turned wings of the outer bag and thereafter adhering the overlying sections of the wings together to complete
5 the sequence of steps to close the open top end of the sack.